AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for data forwarding in label switching networks, comprising ~~the following steps~~:

at [[the]] a source node, distributing and mapping all the data packets forming an original data flow to be forwarded to multiple Label Switching Paths (LSPs) for forwarding, inserting a detection message into the original data flow to be forwarded according to a set period, and when information of an invalid LSP is received from a destination node, stop distributing the data packets to the invalid LSP ; and

at the destination node, receiving the detection message from each of the LSPs according to the set period, when the detection message is found lost, deciding that the LSP becomes invalid, sending the information of the invalid LSP to the source node, stopping receiving the data packets from the invalid LSP, and merging the data packets received from all the LSPs into the same data flow as the original data flow forwarded.

2. (Currently amended) The method according to Claim 1, further comprising: at the source node, adding a sequence number to each data packet forming the original data flow to be forwarded according to the forwarding order before ~~performing the step of~~ mapping the data packets to the LSPs[[;]],

wherein ~~the step of~~ merging the data packets comprises[[:]],

merging the data packets received from the LSPs in the order of the sequence numbers,

removing the sequence numbers of the merged data packets, and

obtaining the same data flow as the original one to be forwarded.

3. (Currently amended) The method according to Claim 2, wherein ~~the step of~~ mapping the data packets to the LSPs for forwarding comprises:

a1. determining the current data packet to be forwarded according to a First In First Out (FIFO) principle, and selecting one LSP through a Round Robin mode of all the valid LSPs;

a2. deciding whether it is allowed to send a data packet via a buffer of the selected LSP, if yes, proceeding to ~~Step~~ a3; if not, proceeding to ~~Step~~ a4;

a3. mapping the data packet to the LSP for forwarding, and proceeding to ~~Step~~ a1;

a4. selecting the next LSP by the Round Robin mode, and proceeding to ~~Step~~ a2.

4. (Currently amended) The method according to Claim 2, wherein ~~the step of~~ adding [[a]] the sequence number comprises: the sequence number to be added to the data packet being increased according to the transmitting order.

5. (Currently amended) The method according to Claim 4, wherein ~~suppose that~~ when the sequence number of the data packet to be merged into the data flow is a variable and [[that]] when the initial value of the variable is the starting value of the sequence numbers added to the data packets to be forwarded at the source node, implementing the data packet receiving and merging the received data packets, ~~and the step of~~ wherein merging the received data packets comprises:

b1. deciding whether there is a sequence number equal to the value of the

variable among the sequence numbers of the data packets outputted from the LSPs through the Round Robin mode of all the valid LSPs, if yes, proceeding to ~~Step~~ b2; otherwise, proceeding to ~~Step~~ b3;

b2. merging the data packet corresponding to the sequence number to a data packet sequence, increasing the variable by one, and proceeding to ~~Step~~ b1;

b3. deciding whether there is, among all the valid LSPs in the Round Robin mode, an LSP that outputs no data packets, if there is, proceeding to ~~Step~~ b1; otherwise, proceeding to ~~Step~~ b4;

b4. merging the data packet that has the minimum sequence number among the data packets outputted from all the valid LSPs in the Round Robin mode to the data packet sequence, making the variable equal to the minimum sequence number pulsing one, and then proceeding to ~~Step~~ b1.

6. (Currently amended) The method according to Claim 5, ~~wherein the Step b4 of~~ merging the data packet that has the minimum sequence number among the data packets outputted from all the valid LSPs in the Round Robin mode to the data packet sequence comprises:

b41. selecting two LSPs randomly from all the valid LSPs;

b42. comparing the sequence numbers of the output data packets of the two LSPs and selecting the minimum number, deciding whether there is unselected LSP left, if there is, proceeding to ~~Step~~ b43; otherwise, proceeding to ~~Step~~ b44;

b43. randomly selecting one from the remaining LSPs, comparing the minimum number with the sequence number of the output data packet of the selected LSP, selecting the minimum number of these two and deciding whether

there is unselected LSP left, if there is, proceeding to ~~Step~~ b43; otherwise, proceeding to ~~Step~~ b44;

b44. merging the data packet corresponding to the minimum number obtained finally to the data packet sequence.

7. (Currently amended) The method according to Claim 6, wherein ~~suppose that~~ when the binary digits of the sequence number of the data packet sent at the source node is n [[;]], the maximum time delay of all the valid LSPs converted to a number of the data packets is ΔD [[;]], the maximum continuous packet loss allowed in one working LSP of all the valid LSPs is ΔL [[;]], and the sequence numbers of the data packets received from the two LSPs at the destination node is variables x and y , respectively[[;]], $\Delta D + \Delta L = |x - y| \leq 2^{n-1}$, ~~and the step of~~ selecting the minimum value comprises:

c1. deciding whether $|x - y| \leq 2^{n-1}$, if yes, proceeding to ~~Step~~ c2; otherwise, proceeding to ~~Step~~ c4;

c2. deciding whether $|x - y| \leq \Delta D + \Delta L$, if yes, proceeding to ~~Step~~ c3; otherwise, proceeding to ~~Step~~ c6;

c3. outputting the minimum of x and y , and completing the comparison of pairs of values;

c4. deciding whether $|x - y| > 2^n - (\Delta D + \Delta L)$, if yes, proceeding to ~~Step~~ c5; otherwise, proceeding to ~~Step~~ c6;

c5. outputting the maximum of x and y , and completing the comparison of

pairs of values;

c6. generating an alarm signal.

8. (Canceled)

9. (Currently amended) A data forwarding system in label switching networks, comprising at least a service bearer logical layer, which comprises at least a source node and a destination node, and a basic network layer, which comprises multiple label switching path(LSP),

wherein the source node is configured to add a sequence number to each of the data packets forming an original data flow to be forwarded according to a forwarding order and to map the data packets to more than one valid LSPs[[; and]]. the source node comprises an adaptation module, a distribution module, multiple labeling modules and multiple network layer processing modules corresponding to each of the LSPs of the basic network layer, respectively,

the adaptation module is used to add sequence numbers to the data packets forming one data flow according to the forwarding order and to forward the sequence-number-added data packets to the distribution module,

the distribution module is used to distribute the received data packets to the labeling modules,

the labeling module is used to add labels to the received data packets, and to forward the label-added data packets to the network layer processing module, and

the network layer processing module is used to map the data packets to the basic network layer for forwarding,

the destination node is configured to merge the data packets received from each of the valid LSPs according to the order of the sequence numbers, and to remove the sequence numbers of the merged data packets to obtain the same data flow as the original data flow forwarded[[.]],the destination node comprises network layer processing modules and de-labeling modules corresponding to each of the LSPs in the basic network layer, as well as a de-adaptation module and a merging module,

the network layer processing module is used to de-map the data packets received from the basic network layer, and then forward the packets to the de-labeling module,

the de-labeling module is used to remove the labels from the received data packets,

the merging module is used to merge the data packets received from each de-labeling module to a data packet sequence according to the order of the sequence numbers,

the de-adaptation module is used to remove the sequence numbers from the data packet sequence after merging and to obtain the same data flow as the original data flow forwarded.

10. (Canceled)

11. (Currently amended) The system according to Claim [[10]] 9, wherein the basic network layer comprises at least one return path;

the source node further comprises operation administration modules (OAM),

each of which is connected to the labeling module and used to insert a detection message to the data flow in the labeling module according to a set period, and after receiving an LSP failure indication sent from the destination node through the return path, to forward the failure indication to the distribution module;

the distribution module is used to stop distributing the data packets to the corresponding labeling module upon receiving the LSP failure indication sent by the OAM;

the destination node further comprises OAMs as well, each of which is connected to a de-labeling module and is used to receive the detection message from the de-labeling module according to the set period, and to send the failure indication to the OAM of the source node through the return path when no detection message is received in the set period, and to send a notice to the merging module; and

the merging module is used to stop receiving the data packets from the LSP upon receiving the notice sent by the OAM.

12. – 17. (Canceled)